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1. Appl Microbiol Biotechnol. 2003 Jul;62(1):61-8. Epub 2003 Mar 11. Related

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A small cryptic plasmid from *Rhodococcus erythropolis*: characterization and utility for gene expression.

Kostichka K, Tao L, Bramucci M, Tomb JF, Nagarajan V, Cheng Q.

Biological and Chemical Sciences and Engineering, Central Research and Development, Experimental Station E328/B48, E. I. DuPont de Nemours Inc Wilmington, DE 19880-0328, USA.

Exploration of metabolically diverse rhodococci is generally hampered by the lack of genetic tools. A small cryptic plasmid (pAN12) isolated from *Rhodococcus erythropolis* strain AN12 was sequenced. Plasmid pAN12 encodes proteins that share homology to replication proteins and putative cell division proteins. By in vitro transposon mutagenesis, we determined that the Rep protein of pAN12 is essential for plasmid replication in *Rhodococcus* spp., and the putative cell division protein Div is important for plasmid stability. The pAN12 replicon is able to replicate in *R. erythropolis* strains AN12 and CW23 (ATCC 47072) and is compatible with the nocardioophage Q4 replicon present on a *Rhodococcus* shuttle plasmid pDA71. pAN12 appears to belong to the pIJ101/pJV1 family of rolling circle replication plasmids. Expression of an isoprenoid pathway gene (*dxs*) on a pAN12-derived multicopy shuttle vector increased production of carotenoid pigments in *R. erythropolis* ATCC 47072.

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